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February 6, 2012

Miami-Dade County Building Department
Room 207
11805 SW 26th Street
Miami, FL 33175-2464
Phone: (786) 315-2000

Regarding: Process Number #C2012038864; "Plan Review Correction Report",

Find below responses to the line items from the report (attached) that require correction.

<u>Structural</u>

5.1) The wind perimeter occurs on every edge (ridge, hip, and leading edge at overhang. Please revise plan (Reviewer notes that everything is designed for zone 3 loads – but perimeter is incorrect.)

Response – Perimeter zone has been reviewed; corrected from 7ft to show a 3.4 foot based on 10% of the least horizontal dimension, Plans have been revised to show perimeter lines and measurements. Design changed to ZONE I and II.

6.1) Component and cladding loads use effective wind area. Effective wind area is for each panel, not the array. The effective wind area is the span times the effective width that need not be less than 1/3 the span length.

Response – We concede that the effective wind area is to be taken at a per panel basis and not as a contiguous array. The wind load report and blueprint have been adjusted to reflect this revision accordingly.

6.2) For cladding fasteners, the effective wind area shall not be greater than the area that is tributary to an individual fastener (ASCE 7). Rem: 100 SF used for effective wind area.

Response – the effective wind area is now taken at a per panel basis, not as a contiguous array. Therefore a 10 SF effective wind area is used. The wind load report and blueprint now reflect this revision.

Included with this submission are the wind load reports generated by Unirac® for both roof zones that the system is to be installed, a revised blueprint with the above mentioned changes as well as a letter from a third party structural engineer.

Sincerely,

David Reed Stevens
Professional Engineer
8380 Glenfinnan Circle
Fort Myers, FL 33912
(239) 671-9210

Certified: David R. Stevens, P.E. FL #34624
2/7/12

David R. Stevens P.E.
PE 34624
Stevens & Associates, LLC
Certificate Of Authorization
29748

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Solarmount / Sunframe Configurator Results

Project Specs

Name:	MANCUSO RESIDENCE
Email:	ADAM@SOLARDIRECT.COM
Telephone:	(941) 209-1439

Project Location

Address:	5200 SW 59TH AVE
City, State:	Miami, FL
Zip code:	33155
County:	Miami-Dade
Basic Wind Speed:	**150 mph (User Modified)**
Ground Snow Load:	0 psf

Array Information

Manufacturer:	ET Solar
Module Model:	ET-P660230
Module Size:	64.57" x 39.06"
Module Rows x Cols	1 x 1
Number of Arrays	1
Total Modules	1
Total Kilowatts	0.23
Racking Type	SolarMount Roofmount
Module Orientation	Portrait
Rail Direction	E-W

Engineering Variables

Description	Variable	Value	Units
Building Height	h	15	ft
Roof Angle		> 7 to 27	degrees
Wind Exposure		C	
Importance Factor		1	
Wind Speed	V	150	mph
Effective Wind Area		10	ft^2
Roof Zone		1	

Design Wind Load Calculation

Description	Variable	Value	Units
Net Design Wind Pressure (Uplift)	P_{net30} (Uplift)	-37	psf
Net Design Wind Pressure (Downforce)	P_{net30} (Downforce)	23.3	psf
Adjustment Factor for Height and Exposure Category	λ	1.21	
Importance Factor	I	1	
Design Wind Load (Uplift)	P_{net} (Uplift)	-44.77	psf
Design Wind Load (Downforce)	P_{net} (Downforce)	28.19	psf

Load Combinations Calculations

Description	Variable	Downforce	Uplift	Units
Dead Load	D	5	5	psf
Total Design Wind Load	Pnet	28.19	-44.77	psf
Snow Load	S	0		
Total Load Combination 1	D + 0.75Pnet + 0.75S	26.1425		psf
Total Load Combination 2	D + Pnet	33.19		psf
Total Load Combination 3	D + S	5		psf

Total Load Combination 4	0.6D + Pnet		-41.77	psf
Max Absolute Value Load		41.77		psf

Distributed Load Calculation

Description	Variable	Value	Units
Maximum Absolute Value of Load Combinations	P	41.77	psf
Module Length Perpendicular to Rails	B	5.38	ft
Distributed Load (Uplift)	w	-112.38	plf
Distributed Load (Downforce)	w	89.29	plf

Rail Span Information

Description	Variable	Value	Units
Racking Attachment Type		Single L	
Racking Attachment		Aluminum Flat Top	
Rail preference			
Revised Rail Span	L	2	ft
Allowable Spans			
Single L Foot	SM	4	ft
Single L Foot	SMHD	6.5	ft
Double L Foot	SM	4	ft
Double L Foot	SMHD	6.5	ft

Point Load Calculations (per Code, these are based on maximum allowable spans as shown in chart above)

Description	Variable	Downforce	Uplift	Units
Single SM Point Load Force	R	357.2	-449.5	lbs
Single SMHD Point Load Force	R	580.4	-730.5	lbs

Point Load Calculations for your span are:

Rail preference				
Revised Rail Span	L		2	ft
Solar Mount Point Load Force	R	178.6	-224.8	lbs

This engineering report and associated bill of materials is to be evaluated to Unirac SolarMount Code Compliant Installation Manual 227.3 (Pub 110616-1cc) and SunFrame Code Compliant Installation Manual 809 (Pub 110518-2cc) which references International Building Code 2003, 2006, 2009 and ASCE 7-05, ASCE 7-02 and California Building Code 2010. The installation of products related to this engineering report is subject to requirements in the above mentioned installation manual.
Rev 3.2 - 8/25/2011

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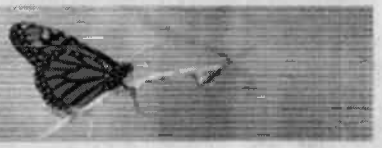

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Number of Arrays	1
Total Modules	1
Total Kilowatts	0.23
Racking Type	SolarMount Roofmount
Module Orientation	Portrait
Rail Direction	E-W

Engineering Variables

Description	Variable	Value	Units
Building Height	h	15	ft
Roof Angle		> 7 to 27	degrees
Wind Exposure		C	
Importance Factor		1	
Wind Speed	V	150	mph
Effective Wind Area		10	ft^2
Roof Zone		2	

Design Wind Load Calculation

Description	Variable	Valuc	Units
Net Design Wind Pressure (Uplift)	P_{net30} (Uplift)	-64.5	psf
Net Design Wind Pressure (Downforce)	P_{net30} (Downforce)	23.3	psf
Adjustment Factor for Height and Exposure Category	λ	1.21	
Importance Factor	I	1	
Design Wind Load (Uplift)	P_{net} (Uplift)	-78.05	psf
Design Wind Load (Downforce)	P_{net} (Downforce)	28.19	psf

Load Combinations Calculations

Description	Variable	Downforce	Uplift	Units
Dead Load	D	5	5	psf
Total Design Wind Load	Pnet	28.19	-78.05	psf
Snow Load	S	0		
Total Load Combination 1	D + 0.75Pnet + 0.75S	26.1425		psf
Total Load Combination 2	D + Pnet	33.19		psf

Total Load Combination 3	D + S	5		psf
Total Load Combination 4	0.6D + Pnet		-75.05	psf
Max Absolute Value Load		75.05		psf

Distributed Load Calculation

Description	Variable	Value	Units
Maximum Absolute Value of Load Combinations	P	75.05	psf
Module Length Perpendicular to Rails	B	5.38	ft
Distributed Load (Uplift)	w	-201.92	plf
Distributed Load (Downforce)	w	89.29	plf

Rail Span Information

Description	Variable	Value	Units
Racking Attachment Type		Single L	
Racking Attachment		Aluminum Flat Top	
Rail preference			
Revised Rail Span	L	2	ft
Allowable Spans			
Single L Foot	SM	2	ft
Single L Foot	SMHD	3.5	ft
Double L Foot	SM	2	ft
Double L Foot	SMHD	3.5	ft

Point Load Calculations (per Code, these are based on maximum allowable spans as shown in chart above)

Description	Variable	Downforce	Uplift	Units
Single SM Point Load Force	R	178.6	-403.8	lbs
Single SMHD Point Load Force	R	312.5	-706.7	lbs

Point Load Calculations for your span are:

Rail preference				
Revised Rail Span	L		2	ft
Solar Mount Point Load Force	R	178.6	-403.8	lbs

This engineering report and associated bill of materials is to be evaluated to Unirac SolarMount Code Compliant Installation Manual 227.3 (Pub 110616-1cc) and SunFrame Code Compliant Installation Manual 809 (Pub 110518-2cc) which references International Building Code 2003, 2006, 2009 and ASCE 7-05, ASCE 7-02 and California Building Code 2010. The installation of products related to this engineering report is subject to requirements in the above mentioned installation manual.
Rev 3.2 - 8/25/2011b

TKW CONSULTING ENGINEERS
Fort Myers
Orlando
Tallahassee

February 2, 2012

Mr. Kirk Maust
Solar Direct
5919 21st Street East
Bradenton, FL 34203-5066

RE: Mancuso Residence
TKW Job No. 12108.00

Dear Kirk:

I reviewed the drawing you provided on the Mancuso Residence showing the component and cladding design wind pressure zones for the roof. I agree with your zones as shown and, in my opinion, the 'a' dimension should be 10% of 34ft or 3.4ft.

Regarding the fasteners, the panel connections to the rail should be designed for the tributary area to the fastener. At four fasteners per panel, the tributary area is less than 10sf, so you would use the design wind pressure for effective wind area of 10sf. However, for the rails which support an array of panels, the tributary area is the length of the rail times the length divided by three. In this case, the rail length is 47ft and the effective wind area is over 700 sf. You can conservatively use the pressures for an effective wind area of 100sf.

Please contact me if you have questions.

Sincerely,
TKW CONSULTING ENGINEERS, INC.

James T. Lange, P.E., S.E.
Structural Engineering Manger

5621 Banner Drive Fort Myers, FL 33912 Tel: 239.278.1992 Fax: 239.278.0922 www.tkwonline.com